



COURSE OUTLINE

The Approved Course Description is available on the web at: <http://camosun.ca/learn/calendar/current/web/math.html>

Examples from a variety of disciplines will introduce the mathematical foundations of statistical inference. Topics: descriptive statistics; elementary probability theory, random variables, discrete and continuous probability distributions, expectation, joint, marginal and conditional distributions; linear functions of random variables; sampling distribution; point and interval estimation; significance testing.

1. Instructor Information

(a)	Instructor:	Bree Wilton
(b)	Location:	E246
(c)	Phone:	250-370-3471
(d)	Email:	wiltonb@camosun.ca
(e)	Webpage:	https://sites.google.com/site/breewilton/
(f)	Office Hours:	1:00-2:00 Monday, Wednesday and 10:30-12:00 Tuesday, Thursday

2. Intended Learning Outcomes

At the end of the course students will be able to:

- Compute and interpret descriptive statistics.
- Compute and interpret probability and conditional probability.
- Compute probability, expectation and variance of a single discrete random variable, or a single continuous random variable. Perform calculations involving Binomial, Poisson, normal, or exponential probability distributions.
- Perform calculations involving joint probability distributions of two discrete random variables, or random samples.
- Derive and compute maximum likelihood estimates.
- Compute and interpret interval estimate for the population mean, population proportion, and determine sample size.
- Compute and interpret interval estimate for a difference of two means.
- Test hypotheses about a mean, a proportion, and the difference of two means.

3. Required Materials

- Textbook
Devore, Jay L., "*Probability and Statistics for Engineering and the Sciences*", 9th edition.
- STAT 218 R Lab Manual, available on my website.
- A Sharp EL-531 Scientific Calculator.

Course Content and Other Course Information

Sections	Topics
1.1 -1.4	Introduction and Descriptive Statistics
2.1 – 2.5	Probability
3.1-3.4, 3.6	Discrete Random Variables and Probability Distributions
4.1-4.4	Continuous Random Variables and Probability Distributions
5.1-5.5	Joint Probability Distribution and Random Samples
6.1-6.2	Point Estimation (omit The Method of Moments)
7.1-7.3	Statistical Intervals: single sample
8.1-8.5	Tests of Hypotheses: single sample (omit β and sample size determination)
9.1-9.2	Inferences Based on Two Samples (omit β and the choice of sample size)

R Labs: This course includes R lab sessions designed to familiarize students with the use of a statistics software to perform data analysis and the procedure of reporting data analysis results. *You will need the lab manual for each lab.* The required lab manual is available on my website. A lab assignment follows each lab session. Lab assignments are due by the **4:30pm** on the Monday following each lab session. . Late labs will be accepted with a penalty of 20% per day until the on time labs have been handed back, after which I will no longer accept them.

Math Lab: Math lab **E224** is staffed with instructional assistants available for **free face-to-face** help (no, they don't answer emails or phone calls). Lab hours are posted on the lab door and on the Math Department page <http://camosun.ca/learn/programs/math/>.

Calculator policy: A Sharp EL-531 scientific calculator is required. This is the *only* calculator that will be allowed for tests and examinations. This calculator is available at the Lansdowne Bookstore, and other stores such as Staples and Office Depot.

Homework: *"I hear and I forget. I see and I remember. I do and I understand."* There are two sets of homework assignments for this course. Set #1 consists of Assignment Worksheets. They will be submitted for credit and will be due by **4:30pm** on the due date. Late assignments will be accepted with a penalty of 20% per day until the on time hand-in assignments have been handed back, after which I will no longer accept them. Set #2 is a list of exercise problems from the textbook. Answers for these problems are given in the textbook. Solutions are available in the student solutions manual. *In order to get a full understanding of the course materials (therefore a good grade), it is necessary to complete both sets of homework. It is essential to do homework after every class and to keep up consistently. **Cramming does not work for this course.***

Practice Tests: There will be a practice test session before each test. Students are encouraged to ask questions and to work together with peers during these sessions. Solutions for these practice tests will be posted on my website. You will benefit most from these practice tests if you come to these sessions with the notes reviewed, all homework problems completed, and a formula sheet made.

Missed Test Policy: Students are expected to make every reasonable effort to write the test at the scheduled time. **A missed test usually counts as a 0**, so if for any reason it appears that you may miss a test,

- **before the test**, talk with the instructor about missing the test, unless an unforeseen emergency makes this impossible, in which case leave a comprehensive message.
- assuming that you qualify for a missed test (for instance, medical or compassionate leave), the weight of the test will be moved to the final exam. There will not be any rewrites of tests.

Please inquire if you have any questions or concerns about your particular situation.

5. Basis of Student Assessment (Weighting)

Assignments /Labs	10%
4 Tests	40%
Cumulative Final Exam (3 hrs)	50%

Please refer to **my website** for tentative *test dates* and lab/homework *due dates*.

Final examinations will be scheduled by the college and they will take place during December 14-19, and December 21-22. You must be available to write the final examination at the scheduled time. Holidays or scheduled flights are not considered to be emergencies.

6. Awards

Among other Mathematics awards, we now have a Statistics Award (\$500). You can find out more information about the awards on this page: <http://camosun.ca/learn/programs/math/scholarships.html>.

7. Grading System

Percentage grades will be converted to letter grades as follows:

A+	[90, 100]	B+	[77, 80]	C+	[65, 70]	F	[0, 50)
A	[85, 90)	B	[73, 77)	C	[60, 65)		
A-	[80, 85)	B-	[70, 73)	D	[50, 60)		

8. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of Academic Policies and Procedures at <http://camosun.ca/learn/calendar/2010/pdf/academic.pdf>. There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services or the College web site at camosun.bc.ca.

STAT 218 Suggested Homework Problems

Section	Problems (9e)	Problems (8e)	Problems (7e)	Problems (6e)
2.1	1, 3, 9	1, 3, 9	1, 3, 9	1, 3, 9
2.2	13, 15, 17, 21, 23	13, 15, 17, 21, 23	13, 15, 17, 21, 23	13, 15, 17, 21, 23
2.3	31,39, 43	31,39, 41	31, 39, 41	31, 39, 41
2.4	45, 47, 49, 63, 65	45, 47, 49, 51, 63, 65	45, 47, 49, 51, 63, 65	45, 47, 49, 51, 63, 65
2.5	71, 73, 75, 79, 85	71, 73, 75, 79, 85	71, 73, 75, 79, 85	69, 71, 73, 77, 83
Ch 2 supp.	91, 93, 99, 101, 103, 109, 113	91, 93, 99, 101, 103, 109, 113	91, 93, 99, 101, 103, 109, 113	89, 91, 97, 99, 101, 107, 111
1.1	5	5	5	5
1.2	15, 19ab	15, 19ab	15, 19ab	15, 19ab
1.3	33, 35, 37, 43	33, 35, 37, 43	33, 35, 37, 43	33, 35, 37, 43
1.4	45, 51, 55, 59	45, 51, 55, 59	45, 51, 55, 59	45, 51, 55, 59
Ch 1 supp.	69, 81	69, 81	69, 81	65, 69, 81
3.1	1, 5, 7, 9	1, 5, 7, 9	1, 5, 7, 9	1, 5, 7, 9
3.2	11, 13, 17, 23	11, 13, 17, 22	11, 13, 17, 22	11, 13, 17, 21
3.3	32, 36, 38, 42	32, 36, 38, 42	32, 36, 38, 42	31, 35, 37, 41
3.4	47, 49, 55, 59, 65	47, 49, 55, 59, 65	47, 49, 55, 59, 65	45, 47, 51, 55, 61
3.6	81, 83, 85	81, 83, 85	81, 83, 85	77, 79, 81
Ch3 supp.	97, 99, 103, 109, 111	97, 99, 103, 109, 111	97, 99, 103, 109, 111	93, 95, 99, 105, 107
4.1	1, 3, 9	1, 3, 9	1, 3, 9	1, 3, 9
4.2	11, 13, 15, 21, 23	11, 13, 15, 21, 23	11, 13, 15, 21, 23	11, 13, 15, 21, 23
4.3	29, 31, 35, 39, 41, 43, 53	29, 31, 35, 39, 41, 43, 53	29, 31, 35, 39, 41, 43, 53	27, 29, 33, 35, 37, 39, 49
4.4	59, 61	59, 61	59, 61	59, 61
4.6	87	87	87	81
Ch4 supp.	99, 101, 103, 111ab	99, 101, 103, 111ab	99, 101, 103, 111ab	93, 95, 97, 105ab
5.1	3, 5, 7	3, 5, 7	3, 5, 7	3, 5, 7
5.2	23, 35	23, 35	23, 35	23, 35
5.3	37, 39, 41	37, 39, 41	37, 39, 41	37, 39, 41
5.4	47, 49, 53	47, 49, 53	47, 49, 53	47, 49, 53
5.5	59, 61, 65, 67, 69	59, 61, 65, 67, 69	59, 61, 65, 67, 69	59, 61, 65, 67, 69
Ch5supp.	75, 79, 83	75, 79, 83	75, 79, 83	75, 79, 83
6.1	1, 5, 7, 9, 11, 13	1, 5, 7, 9, 11, 13	1, 5, 7, 9, 11, 13	1, 5, 7, 9, 11, 13
6.2	22b, 23, 25	22b, 23, 25	22b, 23, 25	22b, 23, 25
7.1	1, 3, 5, 11	1, 3, 5, 11	1, 3, 5, 11	1, 3, 5, 11
7.2	13, 15, 17, 19, 21, 23	13, 15, 17, 19, 21, 23	13, 15, 17, 19, 21, 23	13, 15, 17, 19, 21, 23
7.3	29, 33, 41	29, 33, 41	29, 33, 41	29, 33, 41
Ch7 supp.	47, 51, 55	47, 51, 55	47, 51, 55	47, 51, 55
8.1	1, 3, 5, 9, 11a	1, 3, 7, 9ab	1, 3, 7, 9ab	1, 3, 7, 9ab
8.2	15, 17a, 19a, 21a, 25	19a, 21, 23, 25a, 31	19a, 21, 23, 25a, 31	19a, 21, 23, 25a, 31
8.3	29, 31, 35a, 39a, 41	37a, 39, 41	35, 37, 40	35, 37, 39
8.4	43, 45, 47a, 49a	47, 49, 51, 53, 55, 57	47, 50, 53, 55, 57	47, 49, 51, 53, 55
Ch8 supp.	57, 59, 61, 63, 69, 73	65, 67, 69, 71, 73	63, 65, 67, 69, 73, 75	61, 63, 65, 67, 71, 73
9.1	1ab, 3, 5ab, 9, 11	1ab, 3, 5ab, 9, 11	1ab, 3, 5ab, 9, 11	1ab, 3, 5ab, 9, 11
9.2	17ab, 21, 29, 33	17ab, 21, 25, 33	17ab, 21, 25, 33	17ab, 21, 25, 33